

## CHAPTER 4

### Issue Identification

Water users in the Kissimmee Basin Planning Area are challenged with meeting water supply demands, which are expected to increase by greater than 50 percent by 2025, to an estimated 530 million gallons of water per day. The South Florida Water Management District (SFWMD) is tasked with balancing the needs of the environment with those of the public. As part of this effort, the District is required to set environmental limits on traditional sources of water where its use conflicts with protection of the environment. Where traditional sources appear to be limited, the region's water users and the District are expected to identify and assist in developing alternative water supplies (AWS), where available.

The common objective of water supply stakeholders in the Kissimmee Basin Planning Area is identification and introduction of new sources of water to supplement traditional resources serving the region. This chapter examines the water supply planning issues facing the entire Kissimmee Basin region through 2025, including issues related to alternative water supply development.

### LIMITED TRADITIONAL SOURCES REQUIRE DEVELOPMENT OF ALTERNATIVE WATER SOURCES

[@ Add map highlighting split district boundaries in final draft.]

The northern half of the Kissimmee Basin has historically relied upon ground water from the Floridan Aquifer as its primary water source. However, this relatively inexpensive natural resource cannot satisfy the region's growing demands, especially in light of environmental constraints. To meet projected demands, the District has identified possible alternative water source options for the region. Water reuse, surface water and stormwater recharge are currently the area's main options. However, each alternative water source's development will take time and planning to assure availability will coincide with potable and non-potable demands.

In the southern half of the Kissimmee Basin, sufficient surface water supply has been identified to meet area needs, except in those instances beyond the 1-in-10 year drought level of certainty. However, the amount of water available for annual allocation is limited and still subject to shortage under drought conditions. To address extreme drought events, the District is investigating Aquifer Storage and Recovery (ASR) as well as reservoir options for local water users.

## Lake Istokpoga Regulation Schedule

Surface water from Lake Istokpoga is the traditional source of water used to meet irrigation demands within the Indian-Prairie Basin located in portions of Highlands and Glades counties. Historically, water availability was limited by storage issues and the conflicts inherent in management for flood control, causing temporary water shortages. Due to the limitations on surface water, the Indian-Prairie Basin area was designated a “Restricted Allocation Area” limiting the use of surface water resources (Rule 40E-2.091, F.A.C.; Basis of Review for Water Use Permit Applications, Section 3.2.1., Part A).

The assessment of the available supply from Lake Istokpoga, under current and proposed regulation schedules demonstrates sufficient water is available to meet current and projected 2025 agricultural needs in both the upper and lower portions of the basin during most periods. But, during periods of more severe droughts, it will be necessary to supplement water supplies with water from Lake Okeechobee to meet demands in the southern portion of the Indian-Prairie Basin, including the needs of the Seminole Tribe’s Brighton Entitlement.

The use of water from Lake Okeechobee is still being modeled as of the date of this Plan Update’s release, along with other demands proposed for the lake as part of the South Florida Water Management Model (SFWMM). In order to efficiently use pumps G-207 and G-208 to make deliveries from Lake Okeechobee, a coordinated plan of operation is proposed for the pumps and other basin structures when water supply from Lake Istokpoga is insufficient to meet all of the basin needs. Development of this operational plan is proposed after modeling of Lake Okeechobee has been completed and the revised schedule has been adopted. Under the operational plan, Lake Istokpoga is proposed to remain the primary source to meet the entire demand within the Indian-Prairie Basin. This update recommends that water shortage actions needed to address water supply during these drought periods be established.

## Lake Okeechobee Regulation Schedule Review

Since 1991, when pumps G-207 and G-208 were installed by the District to withdraw water from Lake Okeechobee and deliver it to the southern portion of the Indian-Prairie Basin, the level of Lake Okeechobee fell to a depth below 10 feet mean sea level (MSL) during a time when water was needed for this purpose. This occurrence happened in 2000 when a drought of 1-in-200 years covered the area. Below the depth of 9.6 ft MSL, the production capacity for both pumps is greatly diminished.

The U.S. Army Corp of Engineers (USACE) is expediting modifications to the Lake Okeechobee Regulation Schedule and developing rules to modify its water shortage plans. Adjustments to the schedule may include the lowering of lake levels. Once the lake level falls below 10 feet (MSL), operation of pumps at G-207 and G-208 will be impacted, as these pumps are limited in the ability to pump water below a lake elevation of 9.6 feet MSL. Modeling for Lake Okeechobee operations management is underway at

the time of the drafting of this plan. Modeling and recommendations for modifying the current operation schedule are expected by the end of 2006.

## Regional Reservoir Construction

Another emerging issue for the Kissimmee Basin Planning Area is the proposed regional storage basins to be located north of Lake Okeechobee. The basins will store and treat water prior to entry into the lake. Collectively, these Stormwater Treatment Areas (STAs) may be as large as 40,000 acre-feet in size and represent a potential new alternative water source. A reservoir within the Indian-Prairie Basin has been identified through a preliminary screening process as a possible site for the STA construction. The new reservoir will be designed to accept water from Lake Istokpoga and the Kissimmee River for the purposes of water quality treatment and temporary storage. While the proposed STA is likely to improve water supply availability for portions of the Kissimmee Basin, it is difficult to quantify its impact at this point in time. Construction of this reservoir is anticipated to be completed after 2011.

## Kissimmee Chain of Lakes Management

The Kissimmee Chain of Lakes and the Kissimmee River represent the largest surface water collection system within the Planning Area; and, both sources represent significant water inflow into Lake Okeechobee. This system may also represent the single largest untapped alternative water supply source for the northern Kissimmee Basin Planning Area. At present, the Kissimmee River system is undergoing a major restoration, which will also require water to be stored and released in the Kissimmee Chain of Lakes and its tributaries.

To address the issue of how much potential water is needed for the current restoration effort and how much is available for consumptive uses, the District is developing the Kissimmee Chain of Lakes Long-Term Management Plan. The plan also intends to address temporary deviations for aquatic plant management. The long-term plan is being developed as part of a multi-agency effort, which includes participation by other state agencies, local governments, environmental agencies and the public. The completed plan will recommend lake management options to the U.S. Army Corps of Engineers (USACE) which will best balance the many demands on the lake and river system and help define water supply availability for consumptive uses.

## Options — Water Reuse and Conservation

Central Florida has been a reclaimed water use leader for more than 20 years. In 2001, the 19 major wastewater utility providers within and surrounding the Kissimmee Basin Planning Area generated just over 122 MGD of reclaimed water suitable for reuse. Additional reclaimed water was directed to surface water discharge or storage ponds in low recharge/discharge areas. By the year 2025, projected reclaimed water flows are expected to exceed 243 MGD, an increase of 125 MGD, by the year 2025. Demands for

non-potable needs are estimated to exceed 260 MGD over the same period for the portions of Orange, Osceola and eastern Polk counties located within the SFWMD's jurisdiction. Residential landscape irrigation represents the largest water user category demanding reclaimed water over the coming years.

Over the last few years reclaimed water has been defined more as a valuable resource as opposed to discharge in need of disposal. With this new understanding is the need to address efficient use of the resource. Addressing conservation in the reclaimed water system is an important part of meeting the future demand needs for the northern Kissimmee Basin Planning Area and surrounding region. The development of supplemental sources for reclaimed water supply is the second component needed to maximize the amount of reclaimed water available to delivery.

Aquifer recharge is also an important component for effective use of the reclaimed water system in central Florida. For over 20 years the Conserv II and similar projects have been recharging highly treated reclaimed water to the Floridan Aquifer through the use of Rapid Infiltration Basins (RIBs). The effective recharge of the Floridan Aquifer and mitigation of shallow aquifer drawdown is considered a very beneficial aspect of water reuse. Efforts to identify effective locations for beneficial recharge to the Floridan Aquifer using reclaimed water warrants further investigation.

## **ENVIRONMENTAL PROTECTION FOR NATURAL SYSTEMS**

### **Wetland Protection**

There are significant areas in western Orange and Osceola counties where the confining layer between the Floridan and Surficial Aquifer is thinned and where the potential for wetland impacts are greatest. In these areas, withdrawals from the Floridan may induce lower water levels in the Surficial Aquifer. Wetland impacts are a significant water supply concern in the northern basin.

### **Aquifer Protection from Saltwater Intrusion**

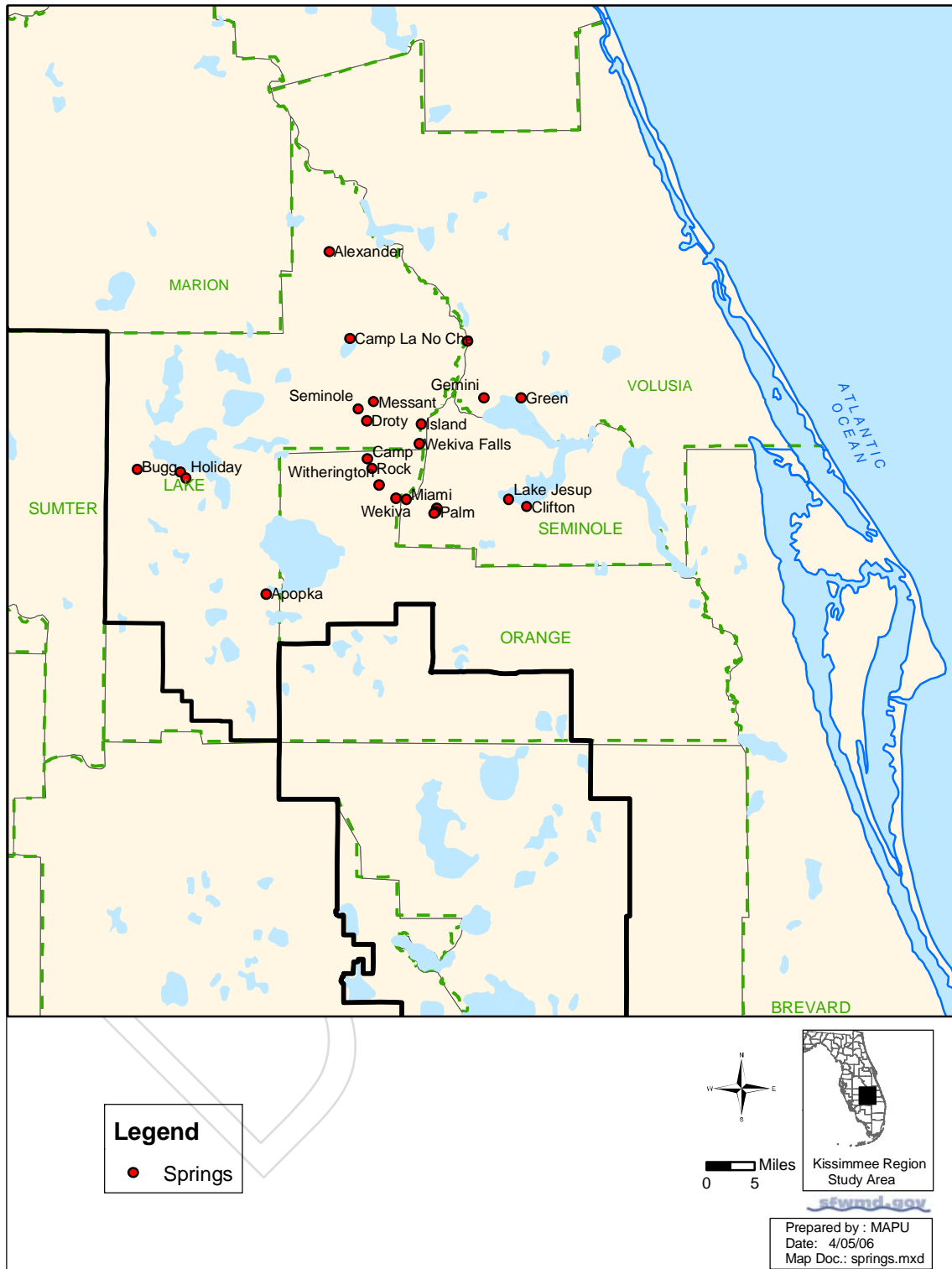
Saltwater intrusion is an important issue for eastern Orange County. An existing public water supply wellfield is located near the interface between fresh and saltwater zones in the aquifer. The location of the saltwater interface in the proximity of existing and potential users constrains the availability of water for allocation. Declines in the Floridan Aquifer level, caused by cumulative withdrawals, have the potential to cause movement of this saltwater interface. Interdistrict cooperation is needed to prevent harm to the aquifer resulting from saltwater intrusion.

## Protection of Lakes Along the Lake Wales Ridge

The Lake Wales Ridge is an environmentally sensitive area characterized by isolated lakes and wetland systems. The Southwest Florida Water Management District (SWFWMD) has established minimum flows and levels (MFLs) for several lakes in the area to limit consumptive use withdrawals, which could adversely impact the water bodies. The SWFWMD relies upon inter-district cooperation with the SFWMD to prevent harm to the lakes along the Ridge.

## Protection of Spring Discharges in the Wekiva Basin

Minimum flows and levels have been set for eight springs in the Wekiva Basin by the St. Johns River Water Management District (SJRWMD). **Figure 1** presents the location of springs within the SJRWMD's jurisdiction. Avoidance of impacts caused by cumulative water withdrawals from the Floridan Aquifer is a significant issue for the central Florida region. Interdistrict cooperation is also needed between the SFWMD and SJRWMD to prevent harm to these springs.



**Figure 1.** Springs within the St. Johns River Water Management District.

## Kissimmee River Restoration and Kissimmee Chain of Lakes Preservation

Between 1962–1971, as part of the Central and Southern Florida Flood Control Project, the meandering Kissimmee River and flanking floodplain were channelized and thereby transformed into a 30-foot deep central drainage canal. This drainage canal is compartmentalized with levees and dam-like water control structures into a series of five relatively stagnant pools.

The Kissimmee River restoration initiative began as a grassroots movement during the latter stages of channelization when concerned citizens and members of the environmental community voiced concerns regarding perceived environmental impacts of the flood control project. Subsequent studies documented the nature of these impacts to the Kissimmee River and its surrounding ecosystem, which include the loss of 30,000–35,000 acres of wetlands, a tremendous reduction in wading bird and waterfowl inhabitants and a continuing long-term decline in game fish populations. These impacts provided the impetus for over 20 years of state and federally mandated restoration related studies, which culminated in the development of a restoration plan that was authorized for implementation as a state/federal partnership in the 1992 Water Resources Development Act. The restoration project will restore over 40 square miles of river and associated floodplain wetlands, and will benefit over 320 fish and wildlife species, including the endangered bald eagle, wood stork and snail kite.

The Kissimmee River Restoration is a long-term goal of the SFWMD that will exceed \$500 million in costs when completed. In 2006, the District acquired the last of the 102,061 acres needed to achieve the river's restoration, land both within the river basin and within the area surrounding the Kissimmee Chain of Lakes. As part of the effort to restore the river, the District must balance several water resource related objectives. Among these objectives are flood controls, environmental resources both in the river and downstream in Lake Okeechobee, aquatic plant management, water quality, and water supply for consumptive uses.

As the restoration effort proceeds, some positive changes have already been observed. Sandbars and a sandy river bottom are emerging as signs of improvement in the rivers' hydrology. In formerly isolated sections of the river, oxbows are flowing again. Emergent and shoreline vegetation has reappeared and is thriving. Waterfowl are returning and water quality is improving.



Sen. Bob Graham and the late Gov. Lawton Chiles join the groundbreaking celebration as the first backfill is deposited in the C-38 Canal for the Kissimmee River Restoration Project.

## ADDITIONAL ISSUES

### Split Water Management District Responsibilities

The water resources in central Florida metro-area are affected by the management decisions made by three water management districts. The St. Johns River Water Management District (SJRWMD) manages water resources in the northern half of Orange County, and Seminole and Lake counties. The South Florida Water Management District (SFWMD) manages the southern half of the municipal area, which includes portions of Polk and Osceola counties, and southern Orange County. In addition, the SFWMD shares a common boundary with the Southwest Florida Water Management District (SWFWMD) to the west of the Kissimmee Basin Planning Area. A growing population along this area is searching for alternative water supply solutions, some of which are proposed within the SFWMD's jurisdiction within the Kissimmee Basin Planning Area. Polk County lies within both SWFWMD and SFWMD.

The groundwater basin for the Floridan Aquifer System covers the entire Kissimmee Basin and links the water supply for all the users in the region. Thus, the identification of water supply issues and solutions requires a cooperative and coordinated effort between all three water management districts.

### Transferring Water between Water Management Districts

Interdistrict transfer is an important issue facing Central Florida and those counties located along the Lake Wales Ridge. Several alternative water supply options have been identified to make withdrawals from or import to the Kissimmee Basin Planning Area. The issue has been addressed by law under Section 373.2295, F.S., but has had limited implementation. Under Section 373.2295, F.S., interdistrict transfers are defined to include proposed withdrawals of groundwater from one water management district for use outside that district's boundaries; however, they do not include withdrawals within a single county. If a cross water management district boundary transfer occurs within a single county, then the public interest test described below applies, but the procedures do not.

Section 373.2295, F.S., requires the water management district in which the withdrawal is proposed to occur to review the consumptive use permit application. In addition to meeting the typical requirements related to reasonable-beneficial use and interference with existing legal users, users are required to satisfy a unique public interest test. In determining whether such a proposed transfer is consistent with the public interest, the reviewing water management district is to refer to the projected populations, as contained in future land use elements of the comprehensive plans of both the withdrawal and use areas together with other evidence on future needs of both areas. Section 373.2295(4), F.S. states that the proposed interdistrict transfer of groundwater will meet the public interest test: "...if the needs of the area where the use will occur and the specific area from which the groundwater will be withdrawn can be satisfied...."



A second significant definition of the consumptive use permit “public interest” test affecting long distance transport of water was adopted with the amendment of Section 373.223(3), F.S. which became known as the “local sources first” statute. It applies when transport of either ground or surface water across county boundaries is proposed, but not when crossing water management district boundaries. In such applications, the water management district is to consider a variety of public interest factors. For example, the factors include consideration of sources that are closer to the area of use; alternatives to the proposed source, including alternative technologies such as desalination; potential environmental impacts; and whether sources are adequate to supply water for existing legal uses and reasonably anticipated future needs of the planning region where the proposed source is located.

DEP regulations require that both the sending and the receiving water management districts approve a proposed interdistrict transfer of surface water. The special public interest considerations that must be met include water conservation measures and reuse implementation in the receiving area, the costs and benefits and environmental impacts that may occur in both areas, and the present and future needs of the supplying area and whether these needs can be expected to be met.

As Florida’s population continues to grow, the development of consensus on resource issues and conditions, and projected future needs along district boundaries is expected to become increasingly important.

## **Southern Indian Prairie Basin Water Supply Limitation**

Under the 2000 KB Plan, an analysis was performed to assess the ability of the G-207 and G-208 pump stations to provide water from Lake Okeechobee into the Indian-Prairie Basin during a 1-in-10 year drought. This analysis was updated as part of the 2005–2006 planning effort. It confirmed that water from Lake Istokpoga was available to meet the projected 2025 1-in-10 year drought demands, but indicates that water from Lake Okeechobee is needed to meet demands during more severe drought events.

The U.S. Army Corps of Engineers, along with the SFWMD and other stakeholders, are participating in an inter-agency study team to implement a new Lake Okeechobee Regulation Schedule. This new lake schedule may allow levels in Lake Okeechobee to fall below 10 feet MSL more frequently. Managing Lake Okeechobee at this level increases the risk of Lake Okeechobee dropping below 9.6 feet MSL at which point the pumps G-207 and G-208 are unable to withdrawal water from Lake Okeechobee. Concerns have been raised by the Seminole Tribe and other stakeholders in the southern Indian-Prairie Basin about the dependability of Lake Okeechobee when droughts occur. Securing a dependable source of water for the Brighton Reservation is of particular importance as the Tribe’s water rights are protected by Entitlement. Other avenues of making supply deliveries to agricultural operations in the southern basin are being reviewed and include Aquifer Storage and Recovery, local reservoirs and deliveries of water from the Kissimmee River. All of these solutions, however, raise issues still

needing resolution. The new Lake Okeechobee Regulation Schedule is scheduled for January 2007.

## LOCAL GOVERNMENT RESPONSIBILITIES TO IMPLEMENT GROWTH MANAGEMENT

### New Connections to Local Government Comprehensive Plans

During the 2002 through 2005 legislative sessions, direct statutory linkages were created for the first time between the water supply planning done by water management districts and the land use planning carried out by local governments throughout the state. In general, the changes coordinate local government land use with regional water supply plans, and establish a closer link between development decisions and the availability of water and public facility planning and funding.

Besides a general requirement to coordinate with regional water supply plans, some of the specific water supply related connections under the new law that now must be addressed in local government comprehensive plans include:

- General Requirement: Identify water supply sources needed to meet existing and projected water use demands for the established planning period of the comprehensive plan [s. 163.3167(13), FS].
- Future Land Use Element: Future land uses are to be based on the availability of water supplies, population projections and associated public facilities [s. 163.3177(6)(a), FS].
- Potable Water Element: The element must [s. 163.3177(6)(c)]:
  - Identify alternative and traditional water supply projects, conservation and reuse needed to meet the water needs identified in the regional water supply plan for the local government's jurisdiction.
  - Within 18 months following an approved update of the regional water supply plan,
    - Incorporate water supply projects from those identified in the regional water supply plan, or propose alternatives.
    - Include a minimum 10-year work plan for building all public, private, and regional water supply facilities needed to serve existing and new development.
- Evaluation & Appraisal Report (EAR): Include an analysis of the implementation of the 10-year work plan for building all water supply facilities within the local government's jurisdiction [s. 163.3191(2)(l), FS].